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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/251,592	02/17/1999	RANDALL W. ROBERTS	19210/106/10	3407

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EXAMINER

JACOBSON, TONY M

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 03/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/251,592

Applicant(s)

ROBERTS ET AL.

Examiner

Tony M. Jacobson

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. New corrected drawings are required in this application because of the deficiencies noted on the attached form PTO 948 Notice of Draftsperson's Patent Drawing Review. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: In referring to Fig. 4, at page 9, line 13, the preamplifier is referred to as "preamplifier 20", while in Fig. 4, it is labeled with the reference character "29".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1, 6, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Ribic (USPN 5,263,089).

5. Regarding claims 1 and 6, Ribic discloses in Fig. 1, a device for use in assisting a hearing impaired patient (a hearing aid) having a microphone (1), a preamp (2), and an output amplifier (4), comprising an active low-pass filter (3) (see column 1, lines 49-55) responsively coupled between the preamplifier and the output amplifier, having an adjustable overshoot (column 3, line 66 through column 4, line 2 and Fig. 4c). Ribic does not disclose a distinct signal processing stage preceding the filter. As

broadly as disclosed and claimed, a signal processing stage could include the active low-pass filter of the present invention. The arbitrary partitioning of the present invention to distinguish the active low-pass filter from other unspecified signal processing functions does not constitute novelty.

6. Regarding claim 16, the hearing aid apparatus disclosed in Fig. 1 of Ribic comprises means (microphone 1) for converting an acoustic signal into an electric signal; means (3) responsively coupled to the converting means for adjustably processing the electrical signal to produce a desired frequency response; and means responsively coupled to the processing means for amplifying the processed signal.

7. Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Miller et al. (USPN 5,406,633).

8. Regarding claim 11, Miller et al. disclose a hearing aid and associated method for its use, comprising measuring the real-ear unaided response (REUR – the acoustic influence or resonance of the auditory canal and concha) of a patient (column 1, lines 18-26); tuning the frequency response curve of an electronic hearing aid to correspond to the measured resonance curve (column 2, lines 39-52); and inserting the tuned electronic hearing aid into the ear of the patient (column 3, lines 21-24).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 2-5, 7, 8, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ribic (USPN 5,263,089) in view of Killion (USPN 4,689,819).

11. Regarding claims 2, 7, and 17, as described above, the hearing aid disclosed by Ribic meets the limitations of claims 1, 6, and 16. Ribic does not disclose a Class-D output amplifier. Killion discloses generally, a Class-D hearing aid amplifier to provide low distortion and low battery drain. It would have been obvious to one of ordinary skill in the art to combine the Class-D power amplifier disclosed by Killion with the active low-pass filter of Ribic in order to provide a hearing aid that is energy-efficient, has low distortion, and has an adjustable frequency response that can be tailored to the auditory response of a particular patient.

12. Further regarding claim 18, the processing means of the hearing aid disclosed by Ribic, utilizing the Class-D output amplifier taught by Killion as described above would comprise an active low-pass filter.

13. Regarding claim 3, the hearing aid of Ribic, combined with the Class-D output amplifier of Killion would not include a buffer amplifier stage responsively coupled between the active low-pass filter and the output amplifier. Official notice is taken that

the use of buffer amplifiers to match impedances between successive stages is notoriously well-known in the art. It would have been obvious to one of ordinary skill in the art at the time the present invention was made to include buffer stages wherever needed to provide impedance matching between stages.

14. Regarding claim 4, since the object of any hearing aid is to correct a deficiency in a patient's hearing response, it would have been obvious to one of ordinary skill in the art to provide a filter with an adjustable overshoot sufficient to match the pass band of the electronic device to correspond to the auditory canal resonance curve.

15. Regarding claims 5, 8-10, 19 and 20, the active low-pass filter disclosed by Ribic may comprise a variable resistor to provide an adjustable peak overshoot frequency, as suggested at column 2, lines 25-29.

16. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (USPN 5,406,633) in view of Killion (USPN 4,689,819).

17. Miller et al. disclose a hearing aid and method meeting the limitations of claim 11, as described above under 35 U.S.C. 102 rejections. Miller et al. do not disclose a Class-D output amplifier. Killion discloses a Class-D hearing aid amplifier with low distortion and low power consumption. It would have been obvious to one of ordinary skill in the art to incorporate an efficient, low-distortion Class-D output amplifier as disclosed by Killion into the hearing aid of Miller et al. to provide a more energy-efficient hearing aid while not introducing excessive distortion to the signal.

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18. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (USPN 5,406,633) in view of Killion (USPN 4,689,819) as applied to claim 12 above, and further in view of Ribic (USPN 5,263,089).

19. Regarding claim 13, Miller discloses a hearing aid with a series of identical biquadratic filter stages that are optionally cascaded to produce a required frequency response. Miller et al. do not explicitly disclose an active low-pass filter. Ribic discloses a simplified energy-efficient hearing aid filter which can produce a low-pass, bandpass, and high-pass response at the same time, using just three transistors and a few passive components. It would have been obvious to one of ordinary skill in the art at the time the present invention was made to substitute the simplified filter structure of Ribic for the complex variable filter structure of the hearing aid of Miller et al. in order to produce a hearing aid that is energy-efficient, simple, and inexpensive to manufacture.

20. Regarding claims 14 and 15, the inherent method of tuning the hearing aid of Miller et al. modified to include the Class-D output amplifier of Killion and the active low-pass filter of Ribic would comprise adjusting the overshoot of the filter response shown in Fig. 4c of Ribic by means of a variable resistor as suggested at column 2, lines 25-29 of Ribic.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

22. Lybarger (USPN 2,112,569) discloses a method and apparatus for selecting and prescribing a hearing aid in which it is suggested at page 3, left column, lines 63-69 to select between different amplifiers each having an underdamped low-pass response with a peak overshoot frequency different from the other amplifiers, as illustrated in Fig. 6.

23. Penn (USPN 2,308,931) discloses a hearing aid apparatus comprising reactive components to produce an underdamped low-pass response with a selected peak overshoot frequency, as illustrated in Fig. 2.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony M. Jacobson whose telephone number is (703) 305-5532. The examiner can normally be reached on Mon. -Fri. 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on (703) 305-4386. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9315 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4750.

tmj
February 26, 2003



FORESTER W. ISEN
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